

A Cluster of Ocular Syphilis Cases with a Common Sex Partner — Southwest Michigan, 2022

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Abstract

Untreated syphilis can lead to ocular syphilis, otosyphilis, and neurosyphilis, conditions resulting from *Treponema pallidum* infection of the eye, inner ear, or central nervous system. During March–July 2022, Michigan public health officials identified a cluster of ocular syphilis cases. The public health response included case investigation, partner notification, dissemination of health alerts, patient referral to a public health clinic for diagnosis and treatment, hospital care coordination, and specimen collection for *T. pallidum* molecular typing. Five cases occurred among southwest Michigan women, all of whom had the same male sex partner. The women were aged 40–60 years, HIV-negative, and identified as non-Hispanic White race; the disease was staged as early syphilis, and all patients were hospitalized and treated with intravenous penicillin. The common male sex partner was determined to have early latent syphilis and never developed ocular syphilis. No additional transmission was identified after the common male partner's treatment. Due to lack of genetic material in limited specimens, syphilis molecular typing was not possible. A common heterosexual partner in an ocular syphilis cluster has not been previously documented and suggests that an unidentified strain of *T. pallidum* might have been associated with increased risk for systemic manifestations of syphilis. A high index of clinical suspicion and thorough sexual history are critical to diagnosing ocular syphilis, otosyphilis, and neurosyphilis. Coordination of disease surveillance with disease intervention specialist investigation and treatment referral can interrupt syphilis transmission.

Investigation and Results

In Michigan, all reactive syphilis laboratory test results are routinely reported to the Michigan Disease Surveillance System (MDSS). Syphilis case investigation and contact tracing

are centralized to the Michigan Department of Health & Human Services (MDHHS), whereas treatment and care are coordinated by local public health departments and health care facilities. On April 21, 2022, a local public health physician at Kalamazoo County Health and Community Services Department (KCHCSD) alerted MDHHS that two cases of ocular syphilis had been identified during the previous 5 weeks in two hospitalized women (patient A and patient B) who were from the same geographic area (Figure). An epidemiologic link was established between patients A and B when a common male sex partner was identified. MDHHS and KCHCSD, which includes a sexual health clinic with comprehensive testing, treatment, and counseling services, coordinated response and investigation of the patients in the cluster. Molecular typing to investigate the genetic strain of syphilis was not possible because of a lack of genetic material in the limited available specimens. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.*

*45 C.F.R. part 46 102(1)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

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Clinical and Epidemiologic Characteristics of Cluster Patients

Among all five women eventually identified in the cluster, prophylactic treatment was offered to every sex partner for whom contact information was available. Each of the five women in the cluster lived in a different southwest Michigan county and were aged 40–60 years (mean = 49.0 years) and identified as White race. All were hospitalized and received intravenous penicillin treatment (Table 1). All were HIV-negative, and none reported drug use or transactional sex. Reported routes of sexual exposure among the five women included anal (40%), oral (40%), and vaginal (100%).

Patient A was referred to KCHCSD in March 2022 by an ophthalmologist for a reactive treponemal antibody test result. Patient A noted blurred vision, fear of blindness, and no improvement in genital lesions with valacyclovir, which the patient had been taking for presumed recurrent herpes simplex virus infection. She received a diagnosis of primary and ocular syphilis, and care was coordinated with hospital A for treatment. An interview identified a recent male sex partner whom patient A had met online. Patient A stated she had no other sex partners during the previous 12 months.

Patient B was identified by KCHCSD's communicable disease surveillance team in April 2022, having been admitted to hospital A for neurosyphilis. Before admission, she reported headache, mild hearing loss, and worsening blurry vision and

double vision for 4 weeks; she had been treated in ambulatory care settings with amoxicillin, oral and intranasal steroids, and antiinflammatory medications, and was referred to an emergency department by an ophthalmologist who noted cranial nerve abnormalities. Patient B named the same recent sex partner named by patient A; patient B also met this partner online. A second named partner of patient B was contacted and received a negative syphilis test result.

Patient C received a reactive syphilis test result and was reported by a clinician to a local health department in southwest Michigan in May 2022. Patient C had a full body rash and peeling skin on the palms of her hands; she reported spots drifting through her field of vision (floaters) and photophobia. The patient was prescribed oral steroids, evaluated by an ophthalmologist, underwent a magnetic resonance imaging study of the brain, and was treated with 1 dose of intramuscular penicillin. MDHHS disease intervention specialists[†] and a local public health physician coordinated inpatient evaluation at hospital A, where the patient was found to have cranial nerve abnormalities. Patient C named the same male sex partner named by patients A and B; patient C also met this partner online. After follow-up by disease intervention specialists, patient C named three additional sex partners, and reported that each of these partners told her that they had received a negative syphilis test result.

[†] <https://www.cdc.gov/std/projects/disease-intervention/default.html>

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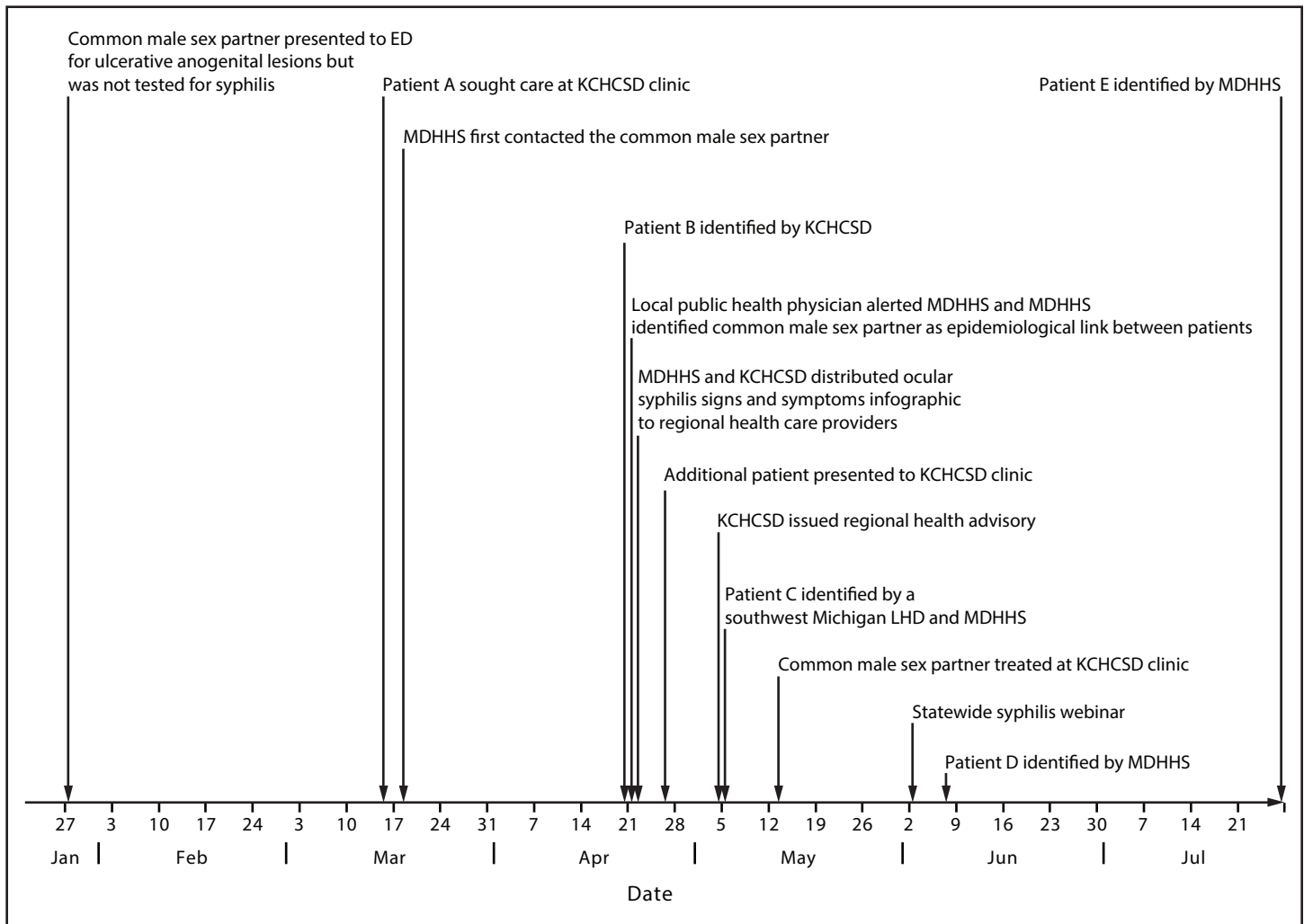
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FIGURE. Investigation and response timeline of an ocular syphilis cluster with a common sex partner — southwest Michigan, 2022*



Abbreviations: ED = emergency department; KCHCSD = Kalamazoo County Health and Community Services Department; LHD = local health department; MDHHS = Michigan Department of Health & Human Services.

* Patients D and E were exposed to the common male sex partner before his treatment.

Patient D received a diagnosis of ocular syphilis from an ophthalmologist in June 2022, after referral to hospital B for worsening vision. During the preceding months, patient D had experienced genital sores and a rash on her hands and abdomen, for which steroids were prescribed. Patient D named the same male sex partner named by patients A, B, and C as a sexual contact during January 2022. Two other sex partners of patient D received negative syphilis test results.

Patient E sought evaluation at hospital B's ophthalmology clinic in May 2022 for visual floaters, seeing flashing lights, and worsening vision after cataract surgery 3 months earlier. She received a reactive treponemal test result, but a nontreponemal test was not performed. Since only a fraction of reactive treponemal test results identify active infections that can be transmitted to others, MDHHS protocols defer certain

investigations until additional results are reported. In July, patient E was admitted to hospital B with neurosyphilis and ocular syphilis. A reactive cerebrospinal fluid venereal disease research laboratory result triggered an MDHHS investigation. During February–April 2022, patient E had sexual contact with the same male partner reported by patients A, B, C, and D. Two other partners of patient E were unnamed; therefore, they could not be contacted.

Common Male Sex Partner

The common male sex partner of patients A–E was contacted by telephone and text message on multiple occasions by MDHHS disease intervention specialists during March–May 2022. He provided limited information, stated that he had traveled out of Michigan, and did not attend a scheduled

TABLE 1. Staging, clinical manifestations, and outcomes of a cluster of ocular syphilis patients — southwest Michigan, 2022

Patient*	Syphilis stage [†]	Ocular manifestation [†]	Neurologic manifestation [†]	Syphilis serologies	CSF result	Hospitalization	Treatment [§]
A	Primary	Likely	No	TPPA reactive USR 1:32	Negative	3 days	IV penicillin x 14 days
B	Secondary	Likely	Verified	MIA reactive USR 1:64	VDRL 1:16	6 days	IV penicillin x 14 days
C	Secondary	Possible	Verified	TPPA reactive RPR 1:512	VDRL 1:8	6 days	IV penicillin x 14 days
D	Secondary	Likely	No	TPPA reactive RPR 1:256	Test not conducted	4 days	IV penicillin x 14 days
E	Early latent	Likely	Likely	IgG positive USR 1:512	VDRL 1:2	21 days	IV penicillin x 14 days
Common male sex partner	Early latent	NA	NA	IgG positive USR 1:64	NA	None	IM penicillin once

Abbreviations: CSF = cerebrospinal fluid; IgG = immunoglobulin G antibody; IM = intramuscular; IV = intravenous; MIA = multiplex immunoassay; NA = not applicable; RPR = rapid plasma regain; TPPA = *Treponema pallidum* particle agglutination; USR = unheated serum regain; VDRL = venereal disease research laboratory test.

* A sixth patient was determined to be unrelated to the cluster through case investigation and is not included.

[†] Syphilis staging and ocular and neurologic manifestations as defined by the 2018 Council of State and Territorial Epidemiologists syphilis case definition.

[§] Outpatient IV penicillin treatment, often by continuous infusion pump, enabled IV treatment duration to exceed duration of hospitalization.

appointment for evaluation in April. In May 2022, after patient C named the same male partner as patients A and B, a local public health physician reviewed the common partner's electronic medical records and discovered that he had sought care at hospital A's emergency department in January 2022 with ulcerative penile and anal lesions. At that time, he was treated with acyclovir for presumed herpes simplex virus infection, a nucleic acid amplification test for herpes simplex virus was negative, and no syphilis serology tests were ordered. After a MDHHS disease intervention specialist renewed contact with him, the common partner scheduled and kept an appointment at KCHCSD in May 2022. Upon evaluation, no signs or symptoms of syphilis were found, and he reported no visual or hearing impairment. On sexual history, he reported having multiple female sex partners during the previous 12 months, but he declined to disclose their identities; he reported no male or transgender sexual contact. He received a diagnosis of laboratory-confirmed early latent syphilis and was treated with 1 dose of intramuscular penicillin. In follow-up interviews, both patient A and patient B stated that the male sex partner had a sore on his penis in January 2022.

Additional Ocular Syphilis Patients

Public health officials used MDSS to compare patients in this ocular syphilis cluster to other patients with ocular syphilis occurring during a similar time frame (Table 2). Among 43 ocular syphilis patients who were not part of the cluster, 19% were HIV-positive, 2% reported injection drug use, and 7% reported transactional sex.

A sixth patient, identified in April 2022, was determined to be unrelated to the cluster because no sexual link to the five other ocular syphilis cases or the common sex partner was

found. This male patient sought treatment at KCHCSD, and received a diagnosis of secondary syphilis with ocular and otic manifestations, and was admitted to hospital A. A cerebrospinal fluid nontreponemal antibody test was reactive, and the patient was treated with 14 days of intravenous penicillin. He named two male sex partners, which did not include the same common male sex partner reported by the five female patients.

Public Health Response

In late April 2022, MDHHS and KCHCSD distributed an infographic to Michigan health care providers via local and state public health sexually transmitted infection email distribution lists regarding signs and symptoms of ocular syphilis, otosyphilis, and neurosyphilis. The MDHHS infographic prompted one physician to notify the sixth patient that his symptoms might indicate ocular syphilis; this resulted in the patient's seeking medical evaluation. In early May 2022, KCHCSD issued a health advisory to area clinicians and to surrounding counties via the Michigan Health Alert Network describing 1) the ocular syphilis cases to date; 2) signs and symptoms of ocular syphilis, otosyphilis, and neurosyphilis; 3) recommendations for obtaining thorough sexual histories, conducting medical evaluations, reporting cases to public health, and consulting with specialists; and 4) recommended treatment options. In early June 2022, KCHCSD, MDHHS, and the New York City STD/HIV Training and Prevention Center presented a training webinar on syphilis diagnosis and treatment, highlighting the southwest Michigan ocular syphilis cluster to county health department nurses, physicians, and sexually transmitted infection staff members from across Michigan.

TABLE 2. Demographic and clinical characteristics for ocular syphilis cluster patients and other ocular syphilis patients from a similar time frame — southwest Michigan, 2022

Characteristic	No. (%)	
	Patients in cluster, southwest Michigan	Patients not in cluster, Michigan
Time frame	March–July	January–August
Total (no.)	5 (100)*	43 (100)
Sex		
Men	0 (—)	32 (74)
Women	5 (100)	11 (26)
Age range, yrs (mean)[†]	40–60 (49.0)	22–75 (43.6)
Age group, yrs		
20–29	0 (—)	5 (12)
30–39	0 (—)	14 (33)
40–49	3 (60)	12 (28)
50–59	2 (40)	5 (12)
≥60	0 (—)	7 (16)
Race		
Asian	0 (—)	1 (2)
Black or African American	0 (—)	11 (26)
White	5 (100)	26 (60)
Other race	0 (—)	4 (9)
Unknown	0 (—)	1 (2)
Hispanic ethnicity		
Non-Hispanic	5 (100)	39 (91)
Hispanic	0 (—)	1 (2)
Unknown	0 (—)	3 (7)
Sexual behavior		
Heterosexual men	0 (—)	9 (21)
Heterosexual women	5 (100)	8 (19)
Men who have sex with men	0 (—)	11 (26)
Sex with anonymous partner	0 (—)	10 (23)
Sex without a condom	5 (100)	26 (60)
Met partner on social media	5 (100)	8 (19)

Discussion

The association between five women with ocular manifestations of syphilis and a common male sex partner is an unusual occurrence and suggests that an unidentified strain of *T. pallidum* might have been associated with increased risk for systemic manifestations of syphilis in these patients. This ocular syphilis cluster is the first documented with epidemiologic linkage among cases attributable to heterosexual transmission. In 2019, a study of 41,187 syphilis cases from 16 jurisdictions with complete reporting, including Michigan, found that incidence of systemic manifestations were rare (neurosyphilis, 1.1%; ocular syphilis, 1.1%; and otosyphilis, 0.4%) (1). A cluster of ocular syphilis was reported in Seattle in 2015 among four men who have sex with men, three of whom were HIV-positive and two of whom were sex partners

TABLE 2. (Continued) Demographic and clinical characteristics for ocular syphilis cluster patients and other ocular syphilis patients from a similar time frame — southwest Michigan, 2022

Characteristic	No. (%)	
	Patients in cluster, southwest Michigan	Patients not in cluster, Michigan
Syphilis staging and manifestation and comorbidity		
Primary	1 (20)	2 (5)
Secondary	3 (60)	7 (16)
Early	1 (20)	5 (12)
Late latent	0 (—)	29 (67)
Neurosyphilis codiagnosis	3 (60)	11 (26)
STI comorbidity and history		
HIV-positive	0 (—)	8 (19)
Previously documented STI CT, NG, or syphilis	1 (20)	13 (30)
Residence[§]		
Southeast Michigan	0 (—)	22 (51)
Southwest Michigan [¶]	5 (100)	5 (12)
Allegan County	1 (20)	1 (2)
Berrien County	0 (—)	1 (2)
Branch County	1 (20)	0 (—)
Kalamazoo County	1 (20)	3 (7)
Saint Joseph County	1 (20)	0 (—)
Van Buren County	1 (20)	0 (—)
Other risk factors		
Reported injection drug use	0 (—)	1 (2)
Unhoused	1 (20)	Unknown
Transactional sex	0 (—)	3 (7)

Abbreviations: CT = *Chlamydia trachomatis*; NG = *Neisseria gonorrhoea*; STI = sexually transmitted infection.

* A sixth patient was determined to be unrelated to the cluster through case investigation and is not included.

[†] Age ranges were rounded to the nearest 10 years to prioritize privacy; age mean for patients in cluster did not use rounded age values.

[§] Southeast Michigan includes Macomb, Oakland, and Wayne counties; for this analysis, southwest Michigan includes Allegan, Barry, Berrien, Branch, Calhoun, Cass, Eaton, Kalamazoo, Saint Joseph, and Van Buren counties.

[¶] Ocular syphilis cluster cases occurred in five of the 10 total southwest Michigan counties.

(2). Among 139 suspected ocular syphilis cases with partner data from four U.S. jurisdictions during 2014–2015, none of the partners had ocular syphilis (3).

Although ocular and neurosyphilis can occur at any stage of syphilis, a 2019 U.S. prevalence estimate found that these clinical manifestations occurred more commonly during late-stage syphilis, and were most prevalent among persons aged ≥65 years and those reporting injection drug use (1). In contrast, among cases in the current reported cluster, all patients had early-stage disease, and were aged 40–60 years, and none reported injection drug use or transactional sex. Although approximately 40% of patients with ocular or neurologic manifestations of syphilis in the 2019 prevalence estimate were HIV-negative, all patients in this cluster were HIV-negative.

The rate of primary and secondary syphilis in Michigan increased from 3.8 per 100,000 persons in 2016, predominantly in southeast Michigan, to 9.7 in 2022, with increasing incidence in southwest Michigan. Although the majority of primary and secondary syphilis cases in Michigan in 2022 occurred in men (77%), and 39% were in men who have sex with men, the proportion of cases occurring in women increased from 9% in 2016 to 23% in 2022. The rate of primary and secondary syphilis among women in Michigan has increased from 2016 to 2022 (from 0.3 to 2.2 per 100,000 among White women and from 2.6 to 15.5 per 100,000 among Black or African American [Black] women).[§]

Differential ascertainment bias might contribute to more frequent identification of ocular syphilis, otosyphilis, or neurosyphilis among White persons than among those who identify as Black or Hispanic in the United States (1). Although all five patients in the observed cluster were non-Hispanic White women, differential ascertainment bias and rising syphilis incidence among Michigan women do not explain the finding of a common sex partner. Michigan has not changed case-based syphilis surveillance reporting methodology, but did implement a systemic manifestation checklist and algorithm in 2020 to improve precision in classifying ocular, otic, and neurologic manifestations, to align with 2018 Council of State and Territorial Epidemiologists' syphilis surveillance definitions.[¶]

Sexually transmitted infection transmission depends upon biologic host and pathogen factors, individual and population risk behaviors, shared social networks, and disease prevalence (4,5). Recommended treatment reduces the duration of infectiousness, thereby interrupting transmission (4). Disease clusters might be explained by strain-specific pathogen factors or shared host susceptibility characteristics; however, no shared host susceptibility characteristics were identified among patients in this cluster. In addition, no disease transmission linked to the cluster was identified after treatment of the male sex partner, and no ocular syphilis patients with sexual linkage to others who also developed ocular syphilis have since been identified in Michigan. These limited observations suggest the possibility that a specific strain of *T. pallidum* might have been associated with ocular and neurosyphilis among the observed patients and ceased to circulate after these patients and their common partner were treated. However, without cluster-specific or wider geographic *T. pallidum* molecular typing surveillance, this hypothesis cannot be confirmed. Molecular typing studies linking ocular or neurologic manifestations to specific

Summary

What is already known about this topic?

Untreated syphilis can lead to rare manifestations of ocular syphilis, otosyphilis, and neurosyphilis. Prompt diagnosis and treatment of syphilis can prevent systemic complications.

What is added by this report?

A cluster of five cases of ocular syphilis in women with a common male sex partner was identified in Michigan, suggesting that an unidentified *Treponema pallidum* strain might have been a risk factor for developing systemic manifestations of syphilis.

What are the implications for public health practice?

Maintaining a high index of clinical suspicion and obtaining a thorough sexual history are critical to diagnosing ocular syphilis, otosyphilis, and neurosyphilis. Coordination of disease surveillance with disease intervention specialist case investigation, partner notification, and treatment referral can interrupt syphilis transmission.

T. pallidum strains produced mixed findings (6,7). Successful *T. pallidum* DNA detection by nucleic acid amplification is most feasible from a primary ulcer or moist secondary lesion (8,9), but in this cluster, only patient A had primary syphilis at the time of diagnosis. Optimized specimen collection procedures and development of standardized *T. pallidum* DNA detection techniques from secondary lesions, serum, whole blood, and cerebrospinal fluid might enhance future evaluation of oculo- or neurotropic potential of *T. pallidum* strains (9).

A local health department with a sexual health clinic, public health physician, and integrated communicable disease surveillance team facilitated initial clinical diagnosis of cases, hospital care coordination, communication to state disease surveillance teams, and treatment of the common sex partner. Case investigation by state disease intervention specialists and partner notification led to the identification of the common sex partner and facilitated treatment referral, resulting in interruption of disease transmission across county jurisdictions.

Implications for Public Health Practice

Coordination of disease surveillance with disease intervention specialist investigation and treatment referral can interrupt syphilis transmission. Maintaining a high index of clinical suspicion and obtaining a thorough sexual history are critical for diagnosis of ocular syphilis, otosyphilis, and neurosyphilis in all clinical settings.** Prompt diagnosis and treatment of syphilis can prevent systemic complications, including permanent visual or hearing loss. Persons at risk for syphilis should

[§] <https://www.michigan.gov/mdhhs/-/media/Project/Websites/mdhhs/Keeping-Michigan-Healthy/HIVSTI/Data-and-Statistics/2022/2013-2022-STI-Trends-in-Michigan-Tables-Summary.pdf>

[¶] <https://cdn.ymaws.com/www.cste.org/resource/resmgr/2017PS/2017PSFinal/17-ID-11.pdf>

** <https://www.cdc.gov/std/syphilis/stdfact-syphilis-detailed.htm>

be evaluated for neurologic, visual, and auditory symptoms; likewise, a careful neurologic examination and neurologic, visual, and auditory symptom evaluation should be conducted among persons with syphilis infection. An immediate ophthalmologic evaluation should be facilitated for persons with syphilis and ocular complaints. Any cranial nerve dysfunction should prompt a lumbar puncture and cerebrospinal fluid evaluation before treatment, if possible.^{††} The CDC 2021 Sexually Transmitted Infections Treatment Guidelines offer recommendations for treatment of ocular syphilis, otosyphilis, and neurosyphilis (10).

^{††} <https://www.cdc.gov/std/syphilis/neuro-ocular-oto.htm>

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Notes from the Field

Diagnosis of Congenital Syphilis and Syphilis Among Females of Reproductive Age Before and During the COVID-19 Pandemic — Chicago, 2015–2022

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Syphilis is a bacterial infection that is of particular concern during pregnancy because of the risk for transplacental fetal infection. Pregnancies complicated by untreated syphilis are at increased risk for adverse outcomes, including stillbirth and long-term physical and cognitive sequelae in the affected infant. After implementation of enhanced efforts (*I*) by the Chicago Department of Public Health (CDPH) to eliminate congenital syphilis, including improvements to the surveillance and case management system, the number of Chicago congenital syphilis cases steadily decreased during 2015–2019, despite national increases in congenital syphilis and local increases in syphilis among females of reproductive age.* In 2020, with the emergence of the COVID-19 pandemic, the trend in Chicago abruptly shifted, and cases of congenital syphilis increased during the next 3 years.

Investigation and Outcomes

Data Collection and Analyses

To evaluate missed prevention opportunities and whether they differed during the prepandemic era (2015–2019) compared with the COVID-19 pandemic (2020–2022), CDPH conducted a comprehensive review of all congenital syphilis cases reported during 2015–2022, including case investigation report forms, disease intervention specialist interview records and field notes, and medical record abstraction (when available). Missed prevention opportunities were categorized into one of the following five mutually exclusive categories: 1) no adequate maternal treatment despite receipt of a timely syphilis diagnosis, 2) no timely prenatal care and no timely syphilis testing, 3) late identification of seroconversion during pregnancy, 4) no timely syphilis testing despite receipt of timely prenatal care, and 5) clinical evidence of syphilis despite maternal completion of treatment (2). Missed opportunities for congenital syphilis prevention before and during the COVID-19 pandemic were compared using Pearson's chi-square test, with p-values <0.01 considered statistically significant. This activity was reviewed by CDC and

*Females of reproductive age are persons aged 15–44 years and assigned female sex at birth.

CDPH, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[†]

Outcomes

During 2020–2022, reported congenital syphilis cases in Chicago increased an average of 74.1% per year, more than 3 times the increase in the rate of reported cases of syphilis in females of reproductive age (22.1% per year) during the same period (Table). The rate of reported syphilis in females of reproductive age decreased 9.5% in 2022 compared with 2021. During 2015–2019, among 67 congenital syphilis cases, 18 (26.9%) resulted from inadequate maternal treatment despite timely syphilis diagnoses; during 2020–2022, this percentage increased to 48.3% (43 of 89 cases), representing approximately an 80% increase ($p = 0.007$). During the pandemic years, this percentage increased each year, from 31.6% (six of 19) in 2020, to 40.0% (10 of 25) in 2021, and to 60.0% (27 of 45) in 2022. Among 67 congenital syphilis cases that occurred during 2015–2019, a total of 14 (20.9%) resulted from late identification of seroconversion during pregnancy. Although the percentage of such cases in 2020 was significantly higher (10 of 19; 52.6%) ($p = 0.006$), the overall percentage of congenital syphilis cases resulting from late identification of seroconversion during pregnancy was similar during 2020–2022 (20 of 89; 22.5%). Although the percentage of cases resulting from absence of prenatal care and timely testing decreased overall, from 40.3% (27) prepandemic to 29.2% (26) during the pandemic, the number of cases in this category in 2021 and 2022 were the highest they had been since 2015. There were no cases due to lack of timely syphilis testing despite timely prenatal care either before or during the pandemic. During 2022, syphilis diagnoses among females of reproductive age decreased.

Preliminary Conclusions and Actions

These data suggest that in Chicago, the pandemic-associated increase in the number of congenital syphilis cases was likely not caused solely by an increase in cases of syphilis in females of reproductive age, and that the relative contribution of the different missed opportunities changed. The increase in late identification of seroconversion during pregnancy that occurred only in 2020 could be explained by a decrease in testing for and treatment of syphilis because of pandemic-associated declines in clinic visits and closures of sexually transmitted infection

[†] 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

TABLE. Changes in syphilis prevalence and missed opportunities for congenital syphilis prevention — Chicago, 2015–2022

Syphilis and CS characteristic	Year, no.									
	Prepandemic, 2015–2019					Pandemic, 2020–2022				
	2015	2016	2017	2018	2019	Total 2015–2019	2020	2021	2022	Total 2020–2022
Females of reproductive age* with syphilis and CS cases [% change from previous year]										
Total primary or secondary syphilis cases in females of reproductive age	52 [NA]	45 [–3.5]	47 [4.4]	64 [36.2]	79 [23.4]	287	122 [54.4]	148 [21.3]	134 [–9.5]	404 [†]
Total CS cases	24 [NA]	12 [–50.0]	11 [–8.3]	11 [—]	9 [–18.2]	67	19 [111.1]	25 [31.2]	45 [80.0]	89 [§]
Missed CS prevention opportunities (% of total)										
No adequate maternal treatment despite receipt of timely syphilis diagnosis	6 (25.0)	1 (8.2)	4 (36.4)	3 (23.1)	4 (44.4)	18 (26.9)	6 (31.6)	10 (40.0)	27 (60.0)	43 (48.3)
No timely prenatal care and no timely syphilis testing	10 (41.7)	5 (41.7)	4 (36.4)	5 (38.5)	3 (33.3)	27 (40.3)	3 (15.8)	13 (52.0)	10 (22.2)	26 (29.2)
Late identification of seroconversion during pregnancy	5 (20.8)	2 (16.7)	2 (18.2)	3 (23.1)	2 (22.2)	14 (20.9)	10 (52.6)	2 (8.0)	8 (17.8)	20 (22.5)
No timely syphilis testing despite receipt of timely prenatal care	0	0	0	0	0	0 (—)	0	0	0	0 (—)
Clinical evidence of syphilis despite maternal treatment completion	3 (12.5)	4 (33.3)	1 (9.1)	0	0	8 (11.9)	0	0	0	8 (9.0)

Abbreviations: CS = congenital syphilis; NA = not applicable.

* Females of reproductive age are persons aged 15–44 years and assigned female sex at birth.

[†] During 2020–2022, reported syphilis cases in females of reproductive age in Chicago increased an average of 22.1% per year.

[§] During 2020–2022, reported congenital syphilis cases in Chicago increased an average of 74.1% per year.

clinics, as well as increased use of telemedicine rather than in-person prenatal care, which precludes the use of phlebotomy. The sustained increase in inadequate maternal treatment of diagnosed syphilis during the pandemic might be related, at least in part, to the diversion of public health resources to COVID-19 mitigation efforts, resulting in increasing challenges to contacting pregnant patients and ensuring treatment. This increase in inadequate maternal syphilis treatment might have resulted in a disproportionate increase in congenital syphilis cases relative to the more modest increase in syphilis cases among females of reproductive age. The decrease in syphilis diagnosis among females of reproductive age during 2022 could represent an actual reduction in cases resulting from improved testing and treatment services, or a decrease in diagnosis and underreporting of cases.

COVID-19 remains an ongoing public health challenge, despite the expiration of the U.S. public health emergency declaration (3). Efforts that support timely identification and appropriate clinical and public health management of syphilis in females of reproductive age and congenital syphilis could help reclaim the progress previously made by CDPH towards elimination of congenital syphilis. The use of provider education about congenital syphilis; electronic reporting systems; improved pregnancy ascertainment; enhanced case management for syphilis cases in pregnancy; strong partnerships with providers, community-based organizations, and maternal and child health programs; and statewide review of all congenital

syphilis cases by a multidisciplinary review board that were used before the pandemic are more important now than ever in light of the rise in cases of congenital syphilis.

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Notes from the Field

House-to-House Campaign Administration of Inactivated Poliovirus Vaccine — Sokoto State, Nigeria, November 2022

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After the 2015 documentation of global eradication of wild poliovirus type 2,* Sabin type 2 oral poliovirus vaccine (OPV) was withdrawn from routine immunization (RI) in all OPV-using countries in 2016, in a global synchronized switch from trivalent OPV (containing vaccine virus serotypes 1, 2, and 3) to bivalent OPV (containing serotypes 1 and 3), to reduce the rare risks for type 2 vaccine-associated paralytic poliomyelitis. Concurrently, the Global Polio Eradication Initiative (GPEI) recommended that all OPV-using countries introduce ≥1 dose of inactivated poliovirus vaccine (IPV) into RI programs; IPV protects against paralysis caused by all three serotypes but cannot be transmitted from person to person or cause paralysis. Use of OPV, especially in areas with low vaccination coverage, is associated with low risk of emergence of vaccine-derived polioviruses (VDPVs). As susceptible persons in new birth cohorts accumulated after withdrawal of OPV type 2, population immunity against infection with serotype 2 declined (1), facilitating the emergence of circulating VDPV type 2 (cVDPV2). During the previous 7 years, cVDPV2 outbreaks required response supplementary immunization activities (SIAs) with monovalent type 2 OPV (mOPV2); however, if SIAs were not of sufficiently high quality and did not achieve high enough coverage, new emergences of cVDPV2 occurred.

Background

Routine administration of 1 dose of IPV at age 14 weeks, which was recommended by GPEI following the switch, provides protection against paralysis caused by all three poliovirus serotypes to approximately 60% of recipients (2); however, 1-dose RI IPV coverage is low in many countries. A substantial number of subnational jurisdictions in Nigeria reported RI IPV coverage <50%, including many in the northern part of the country, based on a combined National Immunization Coverage Survey and Multiple Indicator Cluster Survey conducted in 2021[†] to assess vaccination coverage and various aspects of children's health and education.

* <https://polioeradication.org/news-post/global-eradication-of-wild-poliovirus-type-2-declared/>

[†] <https://www.unicef.org/nigeria/media/6316/file/2021%20MICS%20full%20report%20.pdf>

Controlling cVDPV2 outbreaks requires conducting multiple SIAs. In 2021, novel OPV2 (nOPV2), a more genetically stable version of OPV2 that is less likely to revert to neurovirulence in settings of low population immunity, replaced mOPV2 (3). However, if these campaigns do not reach a high proportion of resident children, cVDPV2 circulation could continue. In Nigeria's northwest Sokoto State, outbreak transmission continued even after eight nOPV2 SIAs conducted since March 2021 (National Primary Health Care Development Agency, Polio Expert Review Committee meeting, Abuja, Nigeria, unpublished data, 2023). Because Sokoto reported 27% RI IPV coverage in 2021 (Figure), a campaign to increase IPV coverage was planned. To conserve limited IPV resources, a 2-dose fractional-dose IPV (fIPV) series, which consists of an intradermal injection of one fifth of a full intramuscular IPV dose, can be administered instead of a singular intramuscular dose (4). The 2 doses are administered at an interval of ≥4 weeks. A large SIA with fIPV administered at fixed-post immunization sites has been implemented in Pakistan, with coverage of 85% (5).

fIPV Vaccination Campaign and Postcampaign Coverage Survey

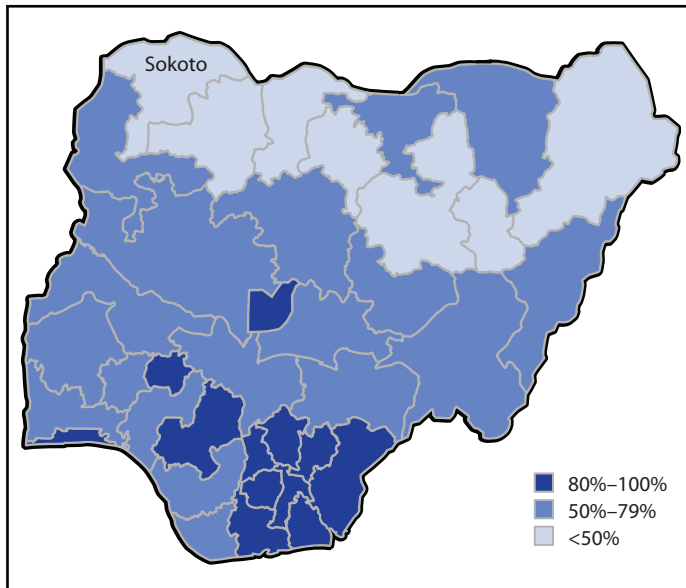
To evaluate whether fIPV could be administered in a house-to-house campaign using a needle-free jet injection device (Tropis, Pharmajet[§]), a pilot project was conducted in Sarkin Adar Gidan Igwai, a ward (subdistrict) of Sokoto State. One fIPV dose was added to an already planned nOPV2 SIA in November 2022, targeting children aged 3–59 months. Nurses were trained to use the devices before they were deployed with nOPV2 vaccination teams. The fIPV dose was withdrawn from a multidose vial into a cartridge in each home. Field evaluation conducted at the time of fIPV vaccination documented that a majority of parents (94%) and health staff members (93%) preferred needle-free injections over the customary needle and syringe administration. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[¶]

To assess postcampaign fIPV coverage, a survey was conducted using the World Health Organization modified cluster survey technique to sample 210 children aged 3–59 months from 30 settlements in the pilot ward. The coverage survey indicated that 87% of children in the target age group had received fIPV during the campaign.

[§] <https://pharmajet.com/tropis-id/>

[¶] 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

FIGURE. Inactivated poliovirus vaccine 1-dose coverage, by state — National Immunization Coverage Survey and Multiple Indicator Cluster Survey, Nigeria, 2021



Preliminary Conclusions and Actions

This pilot study demonstrated that administering an injectable vaccine in a house-to-house campaign with needle-free jet injector devices is feasible and can achieve high coverage. Intensification of RI, including increasing immunization sessions, provision of supportive supervision, and ensuring vaccine availability, will be needed to complete vaccination of children in the pilot ward with the second fIPV dose. Additional pilot studies targeting larger populations should be conducted before this approach can be applied in other low-IPV coverage areas.

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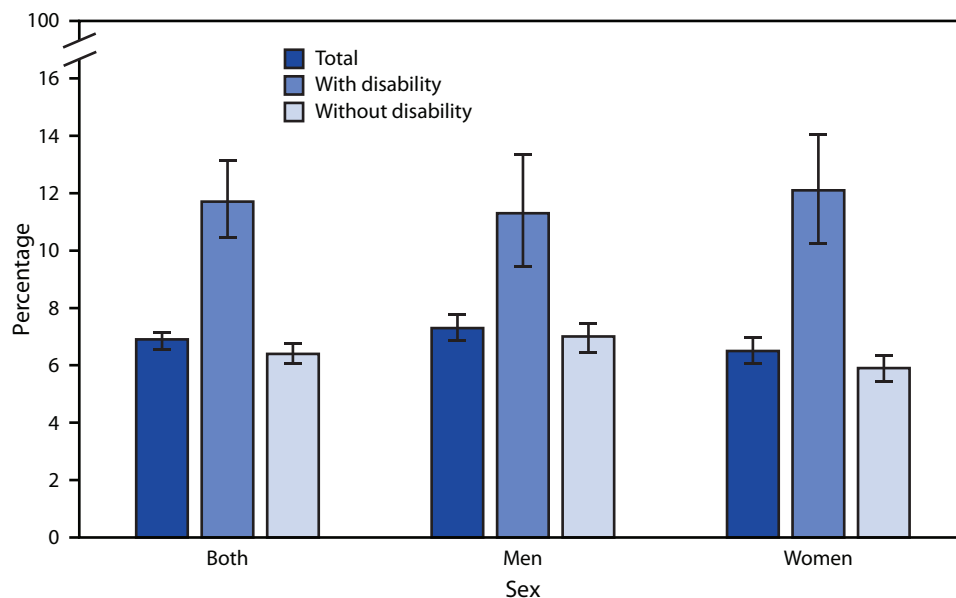
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QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage* of Adults Aged ≥ 18 Years Who Rarely or Never Get the Social and Emotional Support They Need,[†] by Sex and Disability Status[§] — National Health Interview Survey,[¶] United States, 2021



* With 95% CIs indicated by error bars.

[†] Based on a response to the questions, "How often do you get the social and emotional support you need? Would you say always, usually, sometimes, rarely, or never?"

[§] Disability was defined by the reported level of difficulty to questions about six domains of functioning: "Do you have any difficulty... seeing, even if wearing glasses; hearing, even if wearing hearing aids; walking or climbing stairs; communicating, for example understanding or being understood; remembering or concentrating; and self-care, such as washing all over or dressing." Response categories were "no difficulty," "some difficulty," "a lot of difficulty," or "cannot do at all." Adults who responded "a lot of difficulty" or "cannot do at all" to at least one domain were classified as with disability.

[¶] Estimates are based on household interviews of a sample of the civilian, noninstitutionalized U.S. population.

In 2021, 6.9% of adults aged ≥ 18 years rarely or never got the social and emotional support they needed. Overall, the percentage was higher among those with disability (11.7%) than among those without disability (6.4%). Among men, 11.3% of those with disability rarely or never got needed support, compared with 7.0% of those without disability. Among women, 12.1% of those with disability rarely or never got needed support, compared with 5.9% of those without disability. The percentage of women and men with disability who rarely or never got the support needed was similar but was higher for men compared with women among those without disability.

Source: National Center for Health Statistics, National Health Interview Survey, 2021. <https://www.cdc.gov/nchs/nhis/index.htm>

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